REMARKS/ARGUMENTS

Claims 1-23, 28 and 29 are currently pending in the application. Claims 1-23, 28 and 29 have been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over U.S. Patent No. 6,408,282 (Buist) in view of U.S. Patent Publ. No. US2001/0054020 (Barth) and U.S. Patent Publ. No. US2003/0041094 (Lara).

Applicants respectfully request reconsideration of the present application.

Independent claims 1, 15 and 28 have been amended to clarify the hierarchical relationship between elements of the claims. For example, claim 1 has been amended to state that the routing node is "a child routing node of the parent node." Similarly, claim 15 has been amended to state that the "network services engine is a child of the root network services engine," and that "the at least one network services switch is a child of the network services engine." Claim 28 has also been amended to state that "the at least one network services switch is a child of the network services engine." Certain dependent claims have also been amended to account for the foregoing amendments to the independent claims detailed above.

Claims 1-23, 28 and 29 are Allowable over the Proposed Buist-Barth-Lara Combination

A. <u>The Proposed Combination Fails to Disclose, Teach, or Suggest Limitations Recited in the Independent Claims</u>

To establish a prima facie case of obviousness, "the prior art must teach or suggest all the claim limitations." MPEP § 2143; see also MPEP § 2143.03 ("To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested

by the prior art.").

The claimed subject matter is directed to a web services network architecture comprising a distributed hierarchy of nodes that intermediate web services network transactions, routing service action requests based on routing entries that map action identifiers to network resource locators. The hierarchical relation of the nodes is expressly reflected in the amendments to the claim language discussed above. According to the invention, the hierarchy controls the flow of routing information that is distributed to the routing nodes from a root table, allowing individual routing nodes to store only the information they need. This permits light-weight routing node implementations, and allows for the actual software implementations to be installed on existing network gear (e.g., routers). This feature allows multiple routing nodes throughout the network reducing the bottleneck associated with convention web services network gateways.

For example, claim 1 states that a parent node includes a first routing table with routing entries allowing for the routing of service action requests across a computer network. Claim 1 also includes at least one child routing node comprising a local routing table including routing entries allowing for the routing of service action requests across the computer network, wherein the routing entries each comprising an action identifier and a corresponding network resource locator; and wherein the parent node and the child routing node are each operably connected to the computer network to receive service action requests from subscribing nodes, and route service action requests including action identifiers to service providing endpoints associated with the network resource locators corresponding to the action identifiers. When the child routing node receives a service action request "requiring a routing entry not contained in the local routing table," it transmits "a routing entity request to the parent node," which adds "a routing entry to the

local routing table of the routing node in response to a routing entity request." Independent claims 15 and 28 include similar limitations. In addition, claim 5 has been previously amended to state that the routing node and the parent node are both operative to establish respective connections to the service providing endpoints for transmission of the service action requests and receipt of responds to the service action requests. Claim 18 has been amended in a similar manner to claim 5.

As discussed below, the proposed Buist-Barth-Lara combination fails to disclose or suggest the claimed subject matter. For example, the Examiner appears to allege that the master, intermediate and replica servers are engines or switches that route service action requests (apparently because they can be modified to include load balancing functionality). However, this is simply not the case, as Buist does not disclose or suggest this modification. Rather, the master, intermediate and replica servers are (relative to the claimed subject matter) service providing endpoints to which service action requests can be routed. Buist merely discloses a load distribution system that arbitrates among replica servers (service providing endpoints). Specifically, Buist discloses a user-to-user securities trading system, including a root server/database and a plurality of replica servers. At initiation (e.g., user login), a load balancer directs the user to a replica server (leaf node server). A user may then post trades on the replica server, which transmits the trade requests to the root server/database. The root server/database logs the requested trade, assigns an ID, and transmits the updated record to the replica server.

The Examiner alleges that Buist teaches a root network services engine that includes a global routing table including entries allowing for the routing of service action requests, and a network services engine including a routing table allowing for the routing of service action requests over a computer network. The Examiner also alleges that Buist discloses a

network services switch as claimed. The passages cited by the Examiner, however, contain no such teaching.1 As discussed herein, Buist teaches a hierarchical system of servers to process securities transactions. Buist also merely discloses a load balancer operative to arbitrate among the leaf node/replica servers. Buist does not disclose a hierarchical system for routing web services requests, and controlling the flow of routing information among the routing nodes, as disclosed and claimed in the present application.

The Examiner relies on various sections of Buist (mainly Columns 7-11) to achieve the claimed combination. The specific teachings of Buist are addressed below.

For example, the Examiner cites Buist at Col. 7:56-67, Col. 8: 1-62, & Col. 9: 10-41 to allege that it teaches a root network services engine. Buist, Col. 7:56-67 merely teaches that the root server and database contains real-time security information. The root server/database, however, does not contain a routing table allowing for routing of service action requests. Turning to Buist, at Column 8, lines 3-16, the cited passage merely discloses that 1) the intermediate and replica servers store copies of the master database, 2) changes to the master database are provided to the intermediate and replica servers, and 3) that the master, intermediate and replica servers are connected by a network. Buist, Col. 8:17-32 merely discloses how updates to the master database resulting from user transactions processed by the replica server are propagated to the intermediate and replica servers. Buist, Col. 8:33-47 merely discloses that 1) workstations are also connected to broker/dealer server and database; 2) the broker dealer database stores workstation user account information; and 3) the broker dealer server is connected to the master server. Buist, Col. 8:48-62 merely discloses that 1) the master database may store the workstation user account information (obviating need for separate broker/dealer server); 2) that the

1 The impermissible modifications to Buist proffered by the Examiner are analyzed in Section B, below.

workstation users interact with replica servers, and 3) user account and portfolio information is dynamically updated as a result of user transactions. Lastly, Buist Col. 9:10-41 merely discloses that 1) a client application executed on a workstation establishes a connection to a broker/dealer server/database; 2) the user provides authentication information to the database; 3) a successful authentication results in the workstation establishing a second connection to the load balancer 20; 4) the load balancer selects a replica server based on one or more load balancing factors; 5) the load balancer transfers the connection to the selected replica server; and 6) the replica server and the broker/dealer server provide information to the client application to generate various displays.

The Examiner also alleges that Buist, Col. 7:56-67 & Col. 8:1-62 disclose a root network services engine that adds routing table entries to the routing tables of the network services engine and switch (see Office Action at 4). As discussed above, however, Buist discloses no such thing. Buist discloses a single load balancer that directs users to replica (leaf node) servers. The root server/database of Buist provides securities trading and account information, not routing table entries. In addition, Buist, Col. 10:63-67 & Col. 11:1-14 merely discloses how a user transaction is processed by the hierarchical transaction processing system. It does not disclose the transmission of routing entry information throughout a hierarchy of routing nodes. Moreover, Buist does not disclose a system where parent and child nodes each perform routing of service action requests. Rather, in Buist, the replica servers merely contact the root server to accomplish requested transactions. For example, the root server in Buist is required to accomplish a user-to-user securities transaction, while the replica servers are positioned to interact directly with the user, and involve the root server only when required such as to accomplish a trade, or

change user account information.

The Office Action contains other allegations that are unsupportable. For example, to further support the rejections, the Examiner alleges that "the use of multiple load-balancers on multiple hierarchically situated servers and/or routers would have been obvious in light of the teachings of Buist to further facilitate even load distribution among replica servers." Office Action at 3.

In addition, the Examiner also alleges:

> Buist teaches the receipt of updated information from a user workstation, which information would obviously include routing information for servicing a user request, as the routing information would be necessary for location of a user workstation within a hierarchical structure.

Office Action at 5. As discussed above, this contention is unsupportable. For example, as discussed above, workstations are connected to replica servers and broker dealer servers. Since the replica servers handle the direct connection with the workstations to process transaction requests of workstations, it is not necessary to transmit routing information up to the root database. Rather, as discussed above, the replica server transmits the trade requests to the root server/database. The root server/database logs the requested trade, assigns an ID, and transmits the updated record to the replica server. Given this scheme, Applicants question the Examiner as to why the updated information from a user workstation would necessarily include "routing information." Applicant's also question the Examiner as to what "routing information" would be required by other servers in the hierarchy to service a user request. Indeed, since the replica server knows the network address of the workstation, it merely uses that network address to transmit responsive information back to the workstation during the session. There is no need, and indeed no disclosure in the cited references, that teaches or suggests that the update information

processed by the Buist system includes routing information.

Second, the Examiner incorrectly alleges that the workstation is located within a hierarchical structure. This is incorrect in several ways. A workstation connects to a replica server over a computer network and is not contained or located within the hierarchy. Secondly, the replica server is a leaf node of the hierarchy and, in Buist, is the only server type to establish connections with user workstations. Accordingly, a workstation of Buist is not located within the hierarchy. Additionally, even if the workstation were directly connected to a higher level node in the hierarchy of Buist (e.g., a root or intermediate server), distribution of "routing information" is still not required. Rather, any server (regardless of the architecture of the system) would maintain a connection or session with the workstation and transmits responsive messages to it. Accordingly, the Examiner's contention (essentially mere speculation) that routing information is necessarily disseminated throughout the hierarchy to process transactions is not well taken. In the latest office action, the Examiner repeats attempts to support this allegation merely by repeating bald speculation (without a shred of supporting evidence) that "some sort of routing data/information" must be included. See July 26, 2006 Office Action at 12, ¶ 18. The Examiner's contention fails to overcome the serious flaws in the Examiner's reasoning previously raised by Applicant. Furthermore, if the Examiner intends to rely on some teaching in the prior art as supporting this contention, Applicants respectfully request that the Examiner specifically point to at least some supporting evidence in the prior art.

Still further, Barth fails to disclose or suggest the claimed subject matter. The Examiner appears to rely on Barth for its teaching of load balancing systems in connection with "general information inquisitions." Office Action at 6. Relative to Buist, Barth adds

nothing new as it merely discloses a load balancer that arbitrates among a plurality of servers. Specifically, Barth appears to disclose a system that monitors user actions to determine whether the user is searching for information, processes the user actions to compose a search query, and transmits the search query to at least one information supplier. Barth also discloses a load balancing system that arbitrates among a group of servers to support a large user base. Specifically, a load balancer 704 receives information concerning a user session, and chooses a search server from an array of search servers to find resources that may be relevant to the information relating to the user session. Similar to Buist, the search server is another service providing endpoint, while the load balancer arbitrates among these service providing endpoints. Again, Barth does not disclose a hierarchical web services network system that controls the flow or routing entry information among a plurality of routing nodes, as disclosed and claimed.

Still further, the Examiner notes that Applicant has previously amended the claims state that the routing entries include action identifiers and resource locators. See Office Action at 7. The Examiner, citing Barth ¶¶ 0035-0045, then incorrectly suggests that Barth discloses this subject matter. However, Barth's vague statements regarding the use of URLs by client web browsers and the operation of web servers does not disclose this limitation.

The Examiner appears to rely on Lara for a traffic manager that routes web requests to one of the web servers. As with Buist and Barth, Lara does not disclose the claimed subject matter. Rather, like the two references before it, Lara merely discloses a load balancer (traffic manager) that arbitrates among a plurality of web servers. Specifically, Lara et al. teach content replication and distribution in a distributed web server system. For the most part, Lara focuses its teachings on handling changes to content and

distributing these changes to the plurality of servers. See Lara ¶¶ 0007-0009. The system appears to include one or more web servers each including an agent that communicates with a manager and content distributor. The content distributor identifies changes to source file sets, and transmits modification lists to the agents. The agents install the changed files on the file system of the web servers. Lara ¶ 0011. Lara, however, also teaches a traffic manager that directs web requests to "available web servers" to achieve a load balancing function. Lara ¶¶ 0028, 0042.

In summary, none of the cited references discloses a hierarchical web services network system comprising a parent node and a child routing node, where the routing node routes service action requests to service providing endpoints based on routing table information stored in a routing table. The cited references also do not disclose a routing table comprising routing entries, where the routing table entries include an action identifier and a corresponding network resource locator. Furthermore, none of the cited references disclose a web services network system that includes a child routing node that requests routing entry information from the parent node. Moreover, none of the cited references disclose a system where upper level nodes in the hierarchy receive requests from subscribing nodes. In addition, as to claims 5 and 18, none of the cited references disclose a routing node that establishes connections to the service providing endpoints for transmission of the service action requests and receipt of responds to the service action requests. Rather, the load balancers of Buist, Barth, and Lara merely direct or forward web requests to selected servers, and do not establish connections with service providing endpoints to transmit the requests and receive responses.

B. The Examiner has Failed to Properly Establish a *Prima Facie* Case of Obviousness With Respect to the Proposed Combination

Applicants respectfully submit that the rejection of claims 1-23, 28 and 29 based on the proposed Buist-Barth-Lara combination is improper because the Examiner has not shown the required teaching, suggestion, or motivation in Buist, Barth, Lara, or in the knowledge that was generally available to those of ordinary skill in the art at the time of the invention to combine Buist, Barth, and Lara with each other, or to modify their teachings, as proposed.

The question raised under 35 U.S.C. § 103 is whether the prior art taken as a whole would suggest the claimed invention to one of ordinary skill in the art at the time of the invention. Accordingly, even if all elements of a claim are disclosed in various prior art references, which is certainly not the case here as discussed above, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill at the time of the invention would have been prompted to modify the teachings of a reference or combine the teachings of multiple references to arrive at the claimed invention.

The M.P.E.P. sets forth the strict legal standard for establishing a prima facie case of obviousness based on modification or combination of prior art references. "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references where combined) must teach or suggest all the claim limitations." M.P.E.P. § 2142, 2143. The teaching, suggestion, or motivation for the

modification or combination and the reasonable expectation of success must both be found in the prior art and cannot be based on an applicant's disclosure. See Id. (citations omitted). "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art" at the time of the invention. M.P.E.P. § 2143.01. Even the fact that references can be modified or combined does not render the resultant modification or combination obvious unless the prior art teaches or suggests the desirability of the modification or combination. See Id. (citations omitted). Moreover, "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. § 2143.03 (citations omitted).

Applicants respectfully submit that the rejection of claims 1-23, 28 and 29 based on the proposed Buist-Barth-Lara combination is improper, under the M.P.E.P. and governing Federal Circuit cases. In fact, nowhere does the Examiner demonstrate, with respect to the proposed combination, that Buist, Barth, Lara, or knowledge generally available to a person having ordinary skill in the art at the time of the invention would have provided any teaching, suggestion, or motivation whatsoever to make the proposed combination. As an example, to overcome the admitted deficiencies in the teachings of Buist, Barth, and Lara, the Examiner states that Buist can be modified to arrange load balancers in a hierarchy. Specifically, the Examiner, at numerous points, states

> Examiner notes that the use of multiple load-balancers on multiple hierarchically situated servers and/or routers would have been obvious in light of the teachings of Buist to further facilitate even load distribution

among replica servers, (Col. 9, lines 20-27).

Office Action at 3. This contention falls far short of meeting the strict requirements of the M.P.E.P. and governing Federal Circuit case law directed to modification of cited references. First off, the Examiner points to no prior art that would teach or suggest incorporation of load balancers into multiple nodes of a hierarchical system, or the arrangement of load balancers in a hierarchy at all. Buist, Col. 9:20-27 merely discloses that the securities trading system may be accessed by a large user base, and that the load balancer distributes users among the replica (leaf node) servers to balance load. Applicants query the Examiner as to where Buist (or other cited prior art) teaches that load balancers (not servers/databases) can be arranged on multiple, hierarchically-situated servers. In fact, Buist appears to teach away from this modification. Specifically, Buist teaches a system where a load balancer is situated prior to replica servers (leaf nodes) of a hierarchical securities transaction processing system. That is, Buist teaches that users first connect to a load balancer, which transfers requests to a replica server. Buist, Col. 9:30-41. It is the replica servers that directly interact with user workstations to process user transactions. Intermediate and root servers do not directly handle requests. Rather, they handle updates to the master database (including propagation of updates to replica servers) resulting from user transactions. Given the foregoing, Applicants query the Examiner as to how the Examiner's proposed modification (here, using "multiple load-balancers on multiple hierarchically situated servers" would even operate.

Moreover, nowhere does the Examiner demonstrate that a person having ordinary skill in the art at the time of the invention would have reasonably expected the proposed combination to achieve the purported results. First, nowhere does the Examiner demonstrate that the proposed combination would have in fact produced the purported

results. For example, nowhere does the Examiner even attempt to demonstrate that the combination, including the modification not taught by any cited reference, would have achieved the purpose of "facilitating load distribution among replica servers." In addition, even assuming for the sake of argument that the proposed combination would have produced the purported results, nowhere does the Examiner demonstrate that a person having ordinary skill in the art at the time of the invention would have reasonably expected such results. As an example, the Examiner merely asserts that modifying Buist as alleged would have achieved the purpose of facilitating load distribution among replica servers, without even attempting to demonstrate that a person having ordinary skill in the art at the time of the invention would have reasonably expected such result. If the Examiner intends to rely on information that was generally available to a person having ordinary skill in the art at the time of the invention to demonstrate that the purported results of the proposed combination would have been expected by a person having ordinary skill in the art at the time of the invention, Applicant respectfully requests that the Examiner provide documentary evidence that such information was in fact generally available to a person having ordinary skill in the art at the time of the invention, as required by the M.P.E.P. and governing Federal Circuit case law.

For at least these reasons, Applicants respectfully submit that the Examiner has not established a prima facie case of obviousness against claims 1-23, 28 and 29. Applicants respectfully request reconsideration and allowance of claims 1-23, 28 and 29.

In light of the foregoing, Applicant believes that all currently pending claims are presently in condition for allowance. Applicant respectfully requests a timely Notice of Allowance be issued in this case. If the Examiner believes that any further action by

Applicant is necessary to place this application in condition for allowance, Applicants request a telephone conference with the undersigned at the telephone number set forth below.

Respectfully Submitted,
LAW OFFICE OF MARK J. SPOLYAR
By

/Mark J. Spolyar/
Mark J. Spolyar
Reg. No. 42,164

Date: January 26, 2007

Customer Number: 30505
Law Office of Mark J. Spolyar
2200 Cesar Chavez St., Suite 8
San Francisco, CA 94124
415-826-7966
415-480-1780 fax